

FIBER-OPTIC GAUGE HAVING ONE OR MORE SIDE-MOUNTED SENSORS**ABSTRACT OF THE DISCLOSURE**

A fiber-optic gauge having at least one sensor mounted onto a side of an optical fiber.

- 5 In one embodiment, the sensor is optically coupled to the fiber using a thin-film filter inserted into the fiber and preferably oriented at about 45 degrees with respect to the fiber axis. The sensor may be one of a plurality of sensors similarly mounted on and optically coupled to a single optical fiber. Each sensor is designed to change its reflectivity in response to a change in an external physical parameter, e.g., pressure, and is preferably
- 10 adapted for interrogation with monochromatic light. The interrogating light has a plurality of wavelength components, each corresponding to a different sensor. Light reflected from the sensors is de-multiplexed and analyzed to measure the reflectivity of each sensor and to derive the corresponding value of the physical parameter, thereby providing a parameter measurement at each sensor location. Advantageously, gauges of the invention may be used
- 15 in medical applications such as arterial catheterization to provide, e.g., real-time blood-pressure sampling around a damaged area of an artery, while decreasing the patient's trauma compared to that inflicted by prior-art devices where multiple optical fibers are used for a similar measurement.